FM IP-Core: Conversion DVB - FM

Decoding MPEG Audio Layer II (DVB Audio) and Digital
Radio Frequency Modulation

- Processing of digital satellite radio programmes and
  conversion to FM signals (up to 48 services, depending on the
  hardware)
- Completely digital datapath
- Extraordinary audio quality thanks to the digital modulation
- Programme information via RDS (broadcaster's name and
  radio text)
- Efficiency of the resource requirements
- 8-48 radio channels per headend cassette
- New fields of application for already existing hardware

Ressource Requirements

- Altera, Xilinx or Lattice; information on request

maintech GmbH
Max-Planck-Str. 8
D-97204 Höchberg
Germany

Tel +49-(0)931-4070690
Fax +49-(0)931-4070653

Mail info@maintech.de
Web www.maintech.de

Processing of Digital Satellite Radio Programmes and Conversion to Radio Frequency Modulation

Receiving not only television, but also digital radio via satellite, a cable headend possesses an important additional benefit. In order to keep on using already existing analogue FM radio receivers, the digital signal has to be converted to a frequency modulated signal.

maintech's IP-Core offers special advantages for that operation: Because of the completely digital modulation, one single headend cassette can convert up to 48 radio channels; the audio quality exceeds that of an analogue modulation by far. RDS information are transmitted, too.

In the headend station, this single cassette with digital modulation requires not much room. If you are equipped with an already existing hardware for the digital modulation (DVB-T), it may possibly be used for the radio frequency modulation with only little modifications.

MPEG Audio Layer II Decoder

- Decoding of MPEG Audio Layer II according to ISO/IEC 13818-3
- All standardised data rates, sampling rates and stereo modes
- Input: MPEG2 transport stream
- Output: PCM data stream
- The configuration via register interface is compatible to the NIOS-Avalon-Bus
- Apart from the configuration, there is no CPU support necessary
- At an internal clock frequency of 81 MHz, up to 16 data streams can be decoded simultaneously by one MPEG decoder instance
- Optionally: Connection of external RAMs to increase the clock rate

Modulation of Several FM Carriers from PCM data to IF

- Modulation of stereo FM incl. RDS carriers (broadcaster's name and radio text)
- Input: PCM data stream
- Output: IF (25-47 MHz)
- Modulation of several carriers to a IF signal with selectable frequency offset and damping rate
- The configuration via register interface is compatible to the NIOS-Avalon-Bus
- Apart from the configuration, there is no CPU support necessary
- RDS according to IEC-62106:2009

IP Core

For custom hardware developments, the use of an IP core offers the chance to save on development time and opens the possibility of using existing hardware in new applications.

The maintech IP cores are especially suited for this as they were developed with special attention on the following aspects:

- Flexible configuration depending on available ressources and necessary RF processing
- Operation with a single 27MHz crystal
- The modulated signal is available as I/Q baseband or alternatively as a ready-to-use IF signal
- A powerful interpolation filter makes sure that any desired DAC sample rate can be used
- The resulting IF can be chosen freely in steps of a few hundred Hertz
- All transmission parameters can be changed during operation of the IP core; changes are immediately applied

The well-designed and quickly configurable IP-Core is easily implemented and causes a shorter time to market. maintech supports your doing the hardware design, too.

Licencing

The FM IP core is available in different configurations. Depending on your budget and wishes, finished binary images or the complete VHDL source code can be delivered to you.

If you are thinking about the development of a FM modulation, don't hesitate to contact us - we'll be glad to assist you planning your strategy!

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